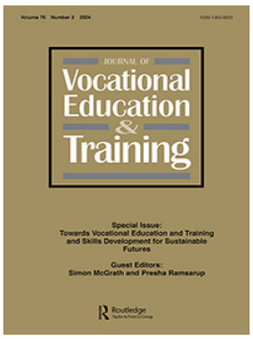

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EDITORIAL

Towards vocational education and training and skills development for sustainable futures

Overview

The scale and urgency of the climate emergency means that major transformations across a range of human systems are both necessary and inevitable; although what is inevitable and what is necessary may not always correspond. Necessarily, this has profound implications for worlds of work and, hence, for vocational education and training systems. Yet, the mainstream VET literature has been very slow to respond to such challenges, and only a handful of papers have been written.

The global challenges are so large and complex that one special issue can only scratch the surface, but we judged it necessary that we at least did that. As the special issue demonstrates, there are a wide range of interpretations within the VET community regarding what research questions need answering in this area, but it is not feasible to reflect all the full range of such approaches in this one issue, for a variety of reasons inherent in the development of such a collection of papers.

In writing this introduction to the special issue, we have made two conscious moves that are intended to be dialogic, as we see the special issue as being about an opening up of a debate rather than a summarising and closing down thereof. First, we need to clarify who we are. The editors of this special issue made a decision early in the development process to invite authors of submitted papers to be co-authors of this editorial. Of course, not all were able/interested in doing so, and not all of those who did contribute did so equally. However, we have chosen here to represent alphabetically the authors who did contribute. Whilst the special issue editors came to this writing process with a strong line, there was an attempt to facilitate critique of this and the surfacing of other accounts. Second, there is a tendency of special issue introductions to either be rather cursory summaries of each paper or to be used as an opportunity to provide a state-of-the-art overview of the field. As we noted above, however, the latter option was scarcely plausible given the paucity of literature on the topic that has come before. Therefore, we have adopted an intermediate approach, reflecting on wider issues of the relationship between skills and sustainable futures that builds on the accounts of the more broadly focused earlier papers in the special issue, before coming to some discussion of more particular themes at micro and meso levels that reflect the contributions of the

second half of the special issue. We end with some thoughts and questions about the immediate challenges to research in this area.

In what follows, we start from the macro level and then focus in. We begin with some consideration of debates that are now more than a decade old about the need for green skills/green VET, and raise questions about what these mean, drawing particularly on the paper by Ramsarup et al. (2024), which sits in turn alongside their wider work on this topic (e.g. Langthaler, McGrath, and Ramsarup 2021; McGrath and Russon 2023; Rosenberg, Ramsarup, and Lotz-Sisitka 2020). We then move on to more recent debates about just transitions (including the narrower policy focus in some countries on just energy transitions) and what this means for skills formation, including for established vocational providers.

From there, we step back to consider the longstanding productivist core of VET thinking (Anderson 2009; McGrath 2012) and the extent to which VET has been complicit in generating the climate crisis (McGrath and Russon 2023). This leads us to argue for a revised approach to the political economy of skills that brings in the ecological dimension, drawing on the paper by Lotz-Sisitka et al. (2024).

This leads us into a third set of discussions that permeate this special issue, regarding new lenses on current and possible VET practices. First, we introduce the growing interest in social ecosystems of skills, as discussed in the paper by Spours (2024) from England, but also a number of recent publications from Africa (e.g. VET Africa 4.0 Collective 2023). We then shift our focus to classrooms and learning labs, as we explore how some attempts to transform VET practices towards sustainability are drawing on aspects of the wider education for sustainable development (ESD) and global citizenship education (GCE) traditions. Here, we consider the papers by Weijzen et al. (2024) and Suhonen et al. (2024).

The fourth move in this introduction and special issue is then to examine a series of case studies of skills and sustainability as explored through the diverse settings of formal industry in Denmark and Hong Kong (Pavlova and Askerud 2024), the Ghanaian informal sector (Owusu-Agyeman and Aryeh-Adjei 2024), rural vocational colleges in Zimbabwe (Muwaniki, Wedekind, and McGrath 2024), rural communities in India (Hermannsson et al. 2024) and gasfitting and the shift to hydrogen in Australia (Orana, Hayes, and Holdsworth 2024).

The greening of skills and VET

Ramsarup, McGrath and Lotz-Sisitka argue that the adjective 'green' serves as a 'floating signifier' meaning everything and nothing, and capable of being both radically transformative and minimally reformist. They note that the green economy lurks behind any notion of green skills, jobs or VET and remind us that there is a strong critique (e.g. Death 2014) that the green economy is little

more than a greenwashing that leaves the structures of capitalism in place and which tells people that they can continue consuming at current levels.

At the level of green VET, they note that much of the current response reflects a minimalist reformist approach, characterised by 'bolt-ons' (Sterling 2004) to existing institutional structures and curricula that are far less radical than the full vision of greening VET imagined by Majumdar (2010) and taken up by UNESCO-UNEVOC under his leadership. Ramsarup, McGrath and Lotz-Sisitka argue further that the appearance of the Sustainable Development Goals in 2015 has further complicated this situation by allowing all new VET initiatives to be branded as 'sustainable' without any need for any transformative substance.

Just transitions?

Alongside greening, there has been a growing notion of transitions. However, here too there are serious tensions and potential contradictions. Much of the initial language of transitions was technocratic, with politicians and many companies still preferring to focus on how technology can save us and, they hope, avoid the hard decisions about patterns of consumption, production and distribution (Ramsarup 2017).

However, this has led to growing accounts that look at questions of sustainability through justice lenses, driven particularly by the international trade union movement. It is argued (Montmasson-Clair 2021) that we need to consider three aspects of justice in thinking about just transitions. First, procedural justice, and how we move from participation to empowerment in deciding both the path towards and the nature of intended transitions. Second, distributive justice, and the move from an important concern with loss mitigation to a more positive conception of gain generation. Third, restorative justice, and a move from conceptions of compensation to those of restoration.

However, just transitions are currently highly contested and union movements have become split over the notion. At the heart of this are questions about the nature of just transitions and the extent to which existing workers are protected in shifts towards new jobs. Inevitably, this issue takes on a very different flavour in contexts where formal sector employment is experienced by the minority rather than the majority. Thus, decisions about reskilling of existing formal sector workers are intensely political. There is also a sense among many communities, such as in mining areas, of considerable scepticism about any promises of loss mitigation given the experiences of many working-class communities globally as primary industries such as mining and fishing have disappeared leaving economic and social collapse in their wake. There are other voices too that are highly critical of the current emphasis on energy as the key transition, particularly where the emphasis is on areas such as hydrogen and electric vehicles. This is seen as another version of earlier green economy approaches in which consumption and production are simply moved to less

carbon-intensive forms rather than radically transformed. All of this has profound implications for skills strategies and for conventional vocational institutions.

From productivist VET to a political-economy-ecology of skills

Authors such as Anderson (2009) and McGrath (2012) called, with little success, for an acknowledgement that the roots of conventional VET were in productivism and that this was untenable if VET was to address the growing environmental crisis.

Giddens (1994) described productivism as a key feature of late modernity in which paid employment was separated off from other aspects of life and economic development as enshrined as the ultimate goal of society. Anderson (2009) built on these arguments to claim that VET is built on two key productivist assumptions:

(1) training leads to productivity, leads to economic growth (training for growth);
(2) skills lead to employability, lead to jobs (skills for work).

For Anderson, this resulted in

> a restricted and instrumental view of lifeworlds which reduces people and the environment to the status of human and natural resources for economic exploitation. Such a perspective overlooks the complex and interdependent nature of human existence, the source and meanings of which are inextricably linked to the social relations, cultural practices and natural material conditions. TVET students are not only already, or aiming to become, workers. They are also human beings and citizens with a wide range of needs, relationships, duties, aspirations and interests beyond work; in the family, the local community, in civil society and the global environment. Over their life course, they give birth, raise and care for family members, consume goods and services, manage finances, fall ill, experience unemployment and hardship, elect governments, get involved in community affairs and ultimately rely for their survival on the fruits of nature. Yet in TVET they learn only to labour and produce commodities. (44–45)

Anderson sees the dominant model of VET as impoverished in its view of skills, work and life, locating this in the neoliberal shift of the 1980s. However, the VET Africa 4.0 Collective (2023) argues that this impoverishment has long been at the heart of modern Anglophone VET, which is inextricably linked to Capitalocene thinking.

In response, Lotz-Sisitka, McGrath and Ramsarup suggest that we need to move beyond the political economy of skills (cf. McGrath and Yamada 2023) and build a political economy ecology of skills account that is more suited to the

current multifaceted challenge where the climate crisis is crucial but connected to other crises.

They acknowledge that the political economy of skills literature, so prevalent in this journal, has shed considerable analytical light on the complexity of skills formation processes, their embeddedness in institutional forms such as vocational colleges and the location of both within wider local, national and global processes of political economy. However, they argue that there was a teleology at the heart of the approach that is fundamentally unsustainable: that growth, development and industrialisation are good, and that the real question is about how their fruits are distributed. Yet, Lotz-Sisitka, McGrath and Ramsarup argue that this ignores the environmental costs of these processes and, crucially, the unequal distribution of this burden. Following in the wake of the ecological economics tradition (Daly and Cobb 1989), they argue that the growing acceptance of the climate crisis requires us also to address the ecological dimension of economic activity.

For skills development, this means adding in a political ecology dimension. Indeed, Lotz-Sisitka, McGrath and Ramsarup contend that one of the major challenges facing VET research is that it needs to genuinely engage with the call to be transformative within a political-ecological-economy focus on the future. As they note, at a practical level, this requires moving beyond the historically dominant foci on mining, manufacturing and motors, and includes a re-orientation of these sectors, while also including land, renewable energy, sustainable food and water-based sectors. However, more broadly it is about a revisioning of what VET is and is for.

A just transitions social ecosystem for skills

One attempt to build such a revisioning comes from Spours. He reviews the emergence of skills ecosystems discussions since Finegold (1999) through to his own work (Hodgson and Spours 2015, 2017; Spours 2021) and that of the VET Africa 4.0 Collective (2023). He notes that there has been a threefold evolution of the use of ecosystem concepts in skills research. First, an application of the natural ecosystem concept to human contexts through a metaphorical process. Second, building beyond a human ecological model to a spatial and political economy ecosystem framework. Third, moving beyond the formal frame to extend skills ecosystems into the social sphere, centring working, living and learning and highlighting the imperatives of sustainable development and social justice. In this, he builds on a rage of recent notions about wider conceptions of the economy, including the foundational economy, concerned with providing the essential goods and services for everyday life (Foundational Economy Collective 2018), and the 'caring economy', which seeks to place care at the centre of our economic,

political and social thinking, both intimate care (childcare, healthcare and elder care) and care for the natural world (Care Collective 2020).

Through drawing on Bronfenbrenner (1979), Spours advances the notion of skills for just transitions in an important multiscalar direction. At the microlevel, he insists that the skills debate cannot be separated off from considerations of how individuals change their everyday beliefs, consumption behaviours and modes of interaction in order to live more justly and sustainably (cf. McGrath and Deneulin 2021). At the mesolevel, he moves into the usual terrain of VET debates by asking questions of the institutions that must support skills for sustainable futures. Here, he builds on his earlier notion of civic anchor institutions to suggest that public VET providers need to become 'just transition organisations'. This goes beyond Majumdar's five-fold green VET institution to place such providers at the centre of local relational networks that are working for just transitions across sectors (what Spours sees as the exolevel). Clearly, however, this is a highly ambitious notion given that we note that most providers are currently addressing the first one or maybe two of Majumdar's criteria. It also points us towards questions of public VET governance, where most providers are disenabled by centralised state control rather than enabled to be 'mission-led innovators', in Spours' vision, drawing on Mazzucato (2016). Here, he sees the rise of the city movement and drives towards local democracy as being essential to the prospects for radical change. This requires radical changes too at the macro level, towards a facilitating state.

The possibilities and limitations of a double transformation of public VET institutions

These first three articles reflect but also expand on UNESCO's commitment to a double VET transformation, in which VET must be transformed in order to contribute to a wider transformation. Spours, in particular, centres this on the conventional public VET institution and argues for it playing a transformed role in its local community. In our next two articles, such arguments are taken further by an exploration of the limitations and possibilities of transformed vocational learning through two projects from Northern Europe. Together, these show what happens when trying to 'build in' a more regenerative orientation in TVET. Their study of practices shows the urgency to go beyond building in or adding on – which may be exhausting – and to make space for rethinking VET.

Weijzen et al. explore how to build a double VET transformation that builds on key elements of a radical education for sustainability tradition such as boundary crossing, ecosystems-based contextual learning (cf. Spours 2019) and knowledge cocreation. They argue that VET urgently needs to cross its own key boundary of preparing young people for the labour market within formal institutions of the education-work nexus and move towards lifelong learning, community integration and a transdisciplinary approach to real-life

problems. Hence, they focus on 'boundary crossing competence' (Oonk et al. 2022). Following on from Spours (2019) and Ramsarup, McGrath, and Lotz-Sisitka (2023), they look for a place-based VET that can facilitate local transitions in a way that addresses alignment between VET, workforce development and living, stressing relationality and reflexivity. In moving beyond the bounds of the formal VET provider and the needs of the formal workplace, their approach opens up new possibilities for knowledge co-creation that permit existing knowledge to be altered, new relations to be shaped and existing issues to be reframed (Wals, Lans, and Kupper 2012). Together, these moves envision a transformed VET that moves towards collaborative learning with and in society. They acknowledge that this radical vision is not simple or quick to achieve. However, they point to the possibilities that can come from a design-based approach that seeks to address the emotional as well as the cognitive domain.

In a similar vein, Suhonen et al. argue that VET should educate critically reflective global citizens who are capable of acting to create a more just and sustainable world both in their workplaces and in society at large. They consider the possibilities that exist within the Finnish upper secondary vocational system for teachers to open up conversations about the challenges of living, working and learning in a period of profound environmental crisis. They note that the Finnish system, for all its global praise, is ill-suited to such a radical reimagining, noting that teachers and learners urgently need time and space to explore the complex and uncertain world and to develop a new conceptualisation of VET that would emphasise care, meaningfulness and relationships (Schmidt 2021).

Reforming skills development for sustainable futures in different contexts

In this section, we consider the challenges of moving towards more sustainable vocational practices across a range of settings, formal and informal, urban and rural, North and South. Here, the focus is less on the radical transformative agendas of the earlier papers in the special issue and more on existing practices and their possibilities and limitations.

Pavlova and Askerud consider evidence from Hong Kong and Denmark that points to the limitations of green skills-related innovation in both economies and skills systems. Echoing much of the argument of Spours, the focus here is on how different actors, especially state, employers and VET institutions, can come together to develop a strong alliance for green innovation. However, they take a very different approach than the preceding papers in placing their argument much more squarely within the existing system of global capitalism and in staying within conventional training-to-work debates.

Informed by the capability approach (cf. McGrath and Powell 2016; McGrath et al. 2023), Owusu-Agyeman and Aryeh-Adjei examine the development of green skills among master craftspeople and apprentices

in the informal sector of Ghana. They look at a series of limitations facing the sector, including inequality and poverty; a cyclical policy trap; and limited human resource capacity including uncoordinated informal learning modes, and note that this is exacerbated by inadequate sectoral green initiatives and the green coordination gap.

Muwaniki, Wedekind and McGrath explore the limits of climate-smart agricultural VET in the context of Zimbabwe. They note that agricultural VET in Zimbabwe is trying to respond to a dual crisis, of economic and environmental collapse. The former means that there are very limited resources for institutional responsiveness, which is in turn constrained by some of the limitations of excessive state control of curriculum that some of the earlier authors in this special issue call to be abandoned. They note that, locally, the climate crisis means different crops must be grown and different livestock herded, but that it is very difficult to get this reflected in curricula that are embedded in a radically different agricultural system that is increasingly irrelevant. This reminds us again of the climate injustice that it is often those most vulnerable who are least able to respond to the existential crisis that they face.

Hermannsson et al. offer a very different disciplinary lens on the question of skills and sustainability as a collaboration between economics and engineers looking at the issue of household energy use in rural India. They note a substantial and statistically significant negative relationship between skills and energy expenditures and suggest that skills development could hence make a significant difference to energy use and, thus, its climate warming effects. Again, this points us beyond the realm of conventional vocational education and some bolt-on greening initiatives and towards some of the questions that earlier papers are asking about learning and living.

Orana, Hayes and Holdsworth consider one aspect of major current debates across the global North regarding just energy transitions. The desire to move away from domestic gas use has seen a variety of technological options being promoted, for instance, heat pumps, and, in their study, hydrogen. However, implementation has been slow with mutually reinforcing concerns of homeowners/landlords about the costs and benefits of such shifts and the reluctance of heating engineers to retrain in the face of limited demand for new skills. As Orana, Hayes and Holdsworth argue, much of the debate about moving over to new domestic heating technologies has remained at the policy level, focused on incentives to customers and training availability for craftspeople. However, as they argue plausibly, we also need to understand the training needs and motivations of existing gasfitters and what is driving their enthusiasm or scepticism regarding retraining, and how this fits into the dynamics of a sector that is characterised by small firms, with consequent implications for their engagement with formal and informal learning.

Building a future debate and transformative practices

Our intention is not so much to summarise the state of the field (indeed, such is that state that any kind of summative special issue seems implausible) but to try to make the case for building it more quickly and collectively.

As we noted at the outset, the special issue has not transcended the gaps, limitations and scotoma that characterise a young and contested area of academic work. Indeed, it was the existing presence of all these in the field that made such a special issue feel imperative. Inevitably, there are gaps. To mention but one, there is nothing here that addresses the contention notion of a dual transition that is digital as well as just. There is no analysis yet of the likely threats and opportunities afforded by artificial intelligence and machine learning (AI-ML) to just transitions. There are plans in the coming period to address the potential contribution of advanced technologies to sustainability developments. In doing so, however, we would wish to avoid two 'technological idealisms'. First, to assume that AI-ML can miraculously come to the rescue as a technological fix. It should not and it will not. Second, that current Big Tech models of AI-ML (notably ChatGPT) can be easily employed to assist social and ecological purposes. They may not because they were not designed for this. This leaves us with the task of thinking about the social repurposing of advanced technologies, capable of supporting paradigm shifts in the ways in which we think about VET and its role in just transitioning.

What we have produced is certainly not synoptic and many differences of approach and opinion continue. However, this issue hopefully is relational and dialogic, something reflected fallibly in the co-authorship of this introductory paper and in the genuine attempts made by the authors of the papers to engage with debates in other traditions reflected in the special issue.

What follows is methodologically and theoretically pluralistic, including strongly normative work and the deeply empirical. Some papers are more evaluative about present practices, pointing towards possible improvements. Others, in contrast, are concerned with radical transformations of the way that we think, act and organise in the area of skills and sustainability. There is both optimism and profound pessimism but an overall sense that change in this area is an existential requirement.

Across the majority of the papers in the special issue (but not all) there is evidence of some common core literature (which is linked largely to work by the more senior contributors to the special issue over the past decade or so). However, what is striking is that this is largely not focused on mainstream VET literature, even though there is very considerable experience within the collective authorship in VET work as teachers, researchers and policy actors. Rather, there is a drawing on literature from beyond the normal boundaries of VET research in order to interrogate, critique and, ultimately, transform VET research and practice. Here we see, for example, a drawing upon political ecology, the

capabilities approach and the education for sustainable development tradition, reflecting McGrath and Yamada's, 2023 notion of an emerging post-political economy of skills movement that is spreading from work on the global South to Northern-focused work.

The contexts considered are diverse but all provide reinforcement of the mantra that contexts matter (Crossley and Jarvis 2001). In addition to national contexts from Africa, Asia, Europe and Oceania, we have research looking at rural households, the urban informal sector, public learning institutions, formal small enterprises and industrial settings, and the policy realm, reinforcing the need to have an expansive view of VET (VET Africa 4.0 Collective 2023).

Especially, in the Southern-focused papers, there is a strong awareness that environmental crises cannot be disentangled from the existing pernicious effects of the global economic regime on the poorest. Hence, addressing the climate crisis through skills development will need to be done in ways that are informed by the poverty both of many of those engaged in skills development and of the institutions and systems supposed to be supporting them. However, this realisation about the interplay of climate and economics is very much alive in the North, particularly in trade union accounts of the just transition, but also in attempts to build working-class climate movements that do not patronise the poor by telling them that the debate is about holiday homes and electric cars when they are at the sharp end of flooding, fuel poverty and rising food prices.

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